

DOCKET: CU-4774

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Poclain Hydraulics Industrie

TITLE: Hydrostatic Transmission Device of a Movable Device with an Exchange

THE COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

AMENDED CLAIMS

1-19. (cancelled)

20. (new) A hydrostatic transmission circuit for a vehicle having at least one first displacement member and at least one second displacement member disposed one after the other in the direction of travel of said vehicle, the circuit comprising at least one main hydraulic pump, two main ducts which are respectively a feed main duct and a discharge main duct, and a first hydraulic motor and a second hydraulic motor for driving respective ones of said first and of said second displacement members, at least the first hydraulic motor being a dual motor made up of two elementary motors, each elementary motor having a feed or discharge first elementary connection and a discharge or feed second elementary connection, the first elementary connections being united to form a common first main connection for the first hydraulic motor, while the second elementary connections are mutually separate and form respective ones of the second and third main connections of the first hydraulic motor, the first main connection of the first hydraulic motor being connected to the first main duct while the third main connection of said first motor is connected to the second main duct, the second hydraulic motor having a first main connection which is also connected to the second main duct and a second main connection which is connected to a feed or discharge additional main duct as is the second main connection of the first hydraulic motor, the circuit further comprising booster means for boosting the feed or discharge ducts and at least one replenishing valve suitable for being connected to one of the main ducts and suitable for taking up an open configuration in which it enables a replenishing link to be established between the main duct to which it is connected at a pressure-free

reservoir, and a closed configuration in which it prevents said link from being established, said circuit further comprising means for preventing the replenishing link from being established on detecting a condition that reveals a spin situation.

21. (new) A circuit according to claim 20, further comprising a replenish enable/disable valve caused to go between an open position in which said enable/disable valve opens the replenishing link and a closed position in which said enable/disable valve closes said link, the replenish enable/disable valve being caused to move between said open and closed positions as a function of a parameter expressing said condition that reveals a spin situation.

22. (new) A circuit according to claim 21, wherein the replenish enable/disable valve is a solenoid valve, receiving a closure control signal when a condition that reveals a spin situation is detected.

23. (new) A circuit according to claim 20, wherein the condition that reveals a spin situation is the fact that the pressure in the boost duct is lower than a determined threshold pressure.

24. (new) A circuit according to claim 21, wherein the condition that reveals a spin situation is the fact that the pressure in the boost duct is lower than a determined threshold pressure.

25. (new) A circuit according to claim 21, wherein the replenish enable/disable valve is driven by a pressure in the boost duct against a return force to go between a replenish enable position in which said enable/disable valve enables the replenishing link to be established, and a replenish disable position in which said enable/disable valve prevents said link from being established.

26. (new) A circuit according to claim 21, wherein the replenish enable/disable valve is disposed between the replenishing valve and the reservoir.

27. (new) A circuit according to claim 20, wherein the replenishing valve has a moving member mounted to move between a first position and second position, which positions correspond respectively to the open configuration and to the closed configuration of the replenishing valve, said replenishing valve having an

opening control chamber suitable for being connected to one of the main ducts for urging the moving member towards the first position thereof and a closure control chamber suitable for being fed with fluid so as to urge the moving member towards the second position thereof, said circuit further comprising a control valve suitable, as a function of the pressure in the boost duct, for connecting said closure control chamber to the pressure-free reservoir or for isolating said chamber from said reservoir.

28. (new) A circuit according to claim 21, wherein the replenishing valve has a moving member mounted to move between a first position and second position, which positions correspond respectively to the open configuration and to the closed configuration of the replenishing valve, said replenishing valve having an opening control chamber suitable for being connected to one of the main ducts for urging the moving member towards the first position thereof and a closure control chamber suitable for being fed with fluid so as to urge the moving member towards the second position thereof, said circuit further comprising a control valve suitable, as a function of the pressure in the boost duct, for connecting said closure control chamber to the pressure-free reservoir or for isolating said chamber from said reservoir.

29. (new) A circuit according to claim 25, wherein the replenishing valve has a moving member mounted to move between a first position and second position, which positions correspond respectively to the open configuration and to the closed configuration of the replenishing valve, said replenishing valve having an opening control chamber suitable for being connected to one of the main ducts for urging the moving member towards the first position thereof and a closure control chamber suitable for being fed with fluid so as to urge the moving member towards the second position thereof, said circuit further comprising a control valve suitable, as a function of the pressure in the boost duct, for connecting said closure control chamber to the pressure-free reservoir or for isolating said chamber from said reservoir and wherein the replenish enable/disable valve is the control valve.

30. (new) A circuit according to claim 27, wherein the closure control chamber is suitable for being fed with fluid by being connected to one of the main ducts.

31. (new) A circuit according to claim 30, wherein the opening and closure control chambers are suitable for being connected to the same main duct, a constriction being disposed between said main duct and the closure control chamber.
32. (new) A circuit according to claim 27, wherein the closure control chamber is associated with replenishing resilient return means urging said moving member continuously towards its second position.
33. (new) A circuit according to claim 20, wherein the second main connection of the first motor and the second main connection of the second motor are interconnected via an interconnection duct.
34. (new) A circuit according to claim 21, wherein the second main connection of the first motor and the second main connection of the second motor are interconnected via an interconnection duct.
35. (new) A circuit according to claim 20, wherein the second connection of the first motor and the second connection of the second motor are connected to respective ones of two orifices of an additional main hydraulic pump.
36. (new) A circuit according to claim 21, wherein the second connection of the first motor and the second connection of the second motor are connected to respective ones of two orifices of an additional main hydraulic pump.
37. (new) A circuit according to claim 33, further comprising means for enabling the replenishing link to be established again when the pressure in the discharge main duct becomes higher than a determined limit pressure.
38. (new) A circuit according to claim 35, further comprising means for enabling the replenishing link to be established again when the pressure in the discharge main duct becomes higher than a determined limit pressure.
39. (new) A circuit according to claim 20, further comprising a replenishing selector suitable for putting the main duct that is at the lower pressure into communication with the replenishing valve.

40. (new) A circuit according to claim 21, further comprising a replenishing selector suitable for putting the main duct that is at the lower pressure into communication with the replenishing valve.

41. (new) A circuit according to claim 39, wherein the replenishing selector is caused to return to a neutral position thereof, in which said selector isolates the two main ducts from the replenishing valve when a pressure in the discharge main duct becomes higher than a limit value.

42. (new) A circuit according to claim 41, wherein the control means for controlling the replenishing selector comprise control chambers suitable for being connected to respective ones of the main ducts via a respective link duct and, for each control chamber, a pressure reducer which, in an open position, is suitable for enabling a link to be established between a main duct and a control chamber via a link duct and, in a closed position, is suitable for interrupting said link and for connecting said link duct to the replenishing valve, each reducer being suitable for going into a closed position thereof when a pressure in the main duct that said reducer connects to the control chamber becomes higher than said limit value.

43. (new) A circuit according to claim 20, wherein the replenishing valve comprises a pressure limiter suitable for being opened by the pressure in the main duct to which its inlet is connected.

44. (new) A circuit according to claim 21, wherein the replenishing valve comprises a pressure limiter suitable for being opened by the pressure in the main duct to which its inlet is connected.

45. (new) A circuit according to claim 43, wherein the replenishing valve comprises a flow-rate regulation device.

46. (new) A circuit according to claim 44, wherein the replenishing valve comprises a flow-rate regulation device.